




Using Standardized Tools to Evaluate Interprofessional Education Related to HACCP Food Safety and Public Health

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**PROJECT TITLE:
Impact of an IPE Activity on Interdisciplinary Student Learning and Collaboration**

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Research

- Introduction
- Background
- Course work / Literature review
- Methods
- Results & Discussion
 - Qualitative
 - Quantitative
- Conclusions


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Introduction

- Students were introduced to interprofessional collaboration through participation in 3 food laboratory sessions focusing on food safety and public health.
- Students were asked to complete 2 post-participation surveys related to interprofessional collaboration.
- Survey results were analyzed to assess participation, collaboration, and reflections.

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Introduction

Research questions:

- Does Interprofessional Education (IPE) activity enhance interdisciplinary student learning and collaboration?
- Does IPE better prepare students for interprofessional careers?

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Background

Purpose:

- To implement an interprofessional education activity for two professions to learn about, from, and with each other to enable effective collaboration and improve health outcomes
- To enhance understanding of HACCP Principles and implementation of food safety and sanitation practices during real meal production
- To better understand the implementation needed to achieve active managerial control of foodborne illness risk factors.

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Background

College of Nursing & Health Professions

NUTR 381 Quantity Food Production and Purchasing Fall 2016	PH 284 Public Health Fall 2016
Students n = 22	Students n = 28

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Coursework NUTR 381

- National Restaurant Association ServSafe Manager Certification completed in September 2016
- Introduction to the Hazard Analysis Critical Control Point system through the ServSafe course
- Each of 6 groups completed a course project: Meal planning, preparation, and service based on a cultural theme in quantity for 16 guests
- Invitation to Guest Lecture of Sanitarian and Inspector: Director, Environmental Division, Vanderburgh Co. Health Dept. (local authority)

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Course Work PH 284

- Guest Lecture by the Director of Environmental Health of the Vanderburgh County Health Department, the local Food Sanitarian and Inspector.
- Two additional lectures on food-borne illnesses, surveillance, out-break investigations
- Debate sessions were organized in class. Students formed teams that prepared to defend and argue on various debatable issues related to public health and food safety.
- Debate issues were: Role of food industry in protecting public health, government regulations, and the role of consumers in protecting their personal health from food-borne illnesses.

Methods

- HACCP Plans created by each of the 6 NUTR 381 groups for specific meal project
- Checklists created by PH 284 groups to use in observation and inspection of meal project preparation and service

Tools

- Interprofessional Collaborative Competencies Attainment Survey (ICCAS)
- Brookfield's Critical Incident Questionnaire and Lewinian Experiential Model adapted into 6 questions in one Critical Incident Questionnaire

Tools

ICCAS - Interprofessional Collaborative Competencies Attainment Survey

Please indicate your course: _____ PH 284 _____ NUTR 381 and Lab Day

Please answer the following questions by filling in the circle that most accurately reflects opinion about the following interprofessional collaboration statements:
1 = strongly disagree; 2 = moderately disagree; 3 = slightly disagree; 4 = neutral; 5 = slightly agree; 6 = moderately agree; 7 = strongly agree; na = not applicable

Please rate your ability for each of the following statements:

Before participating in the learning activities I was able to:	After participating in the learning activities I am able to:
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ICCAS

	Before participating:							After participating:								
	1	2	3	4	5	6	7	na	1	2	3	4	5	6	7	na
Communication																
1. Promote effective communication among members of an interprofessional (IP) team*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Actively listen to IP team members' ideas and concerns	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Express my ideas and concerns without being judgmental	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Provide constructive feedback to IP team members**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5. Express my ideas and concerns in a clear, concise manner	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Collaboration																
6. Seek out IP team members to address issues	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7. Work effectively with IP team members to enhance care	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8. Learn with, from and about IP team members to enhance care	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roles and Responsibilities																
9. Identify and describe my address and contributions to the IP team	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10. Be accountable for my contributions to the IP team	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11. Understand the abilities and contributions of the IP team members	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12. Recognize how other skills and knowledge complement and overlap with my own	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Conflict Management/Resolution																
13. Actively listen to the perspectives of IP team members	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14. Take into account the ideas of IP team members	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15. Address team conflict in a respectful manner	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Team Functioning																
16. Develop an effective care*** plan with IP team members	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17. Negotiate responsibilities within overlapping scopes of practice	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*The patient's family or significant other, when appropriate, are part of the IP team. **The word "patient" has been employed to represent client, resident, and service users. ***The term "care" includes intervention, treatment, therapy, evaluation, etc. © MacDonald, Archibald, Trumpower, Jelley, Cragg, Casimiro, & Johnstone, 2009

Tools

Brookfield's Critical Incident Questionnaire (adapted):

1. During which stage (or task) of this project did you feel most engaged?
2. During which stage (or task) of this project did you feel most distanced from what was happening?
3. What action that anyone (teacher or student) took during any stage (or task) of the project was most affirming and helpful?

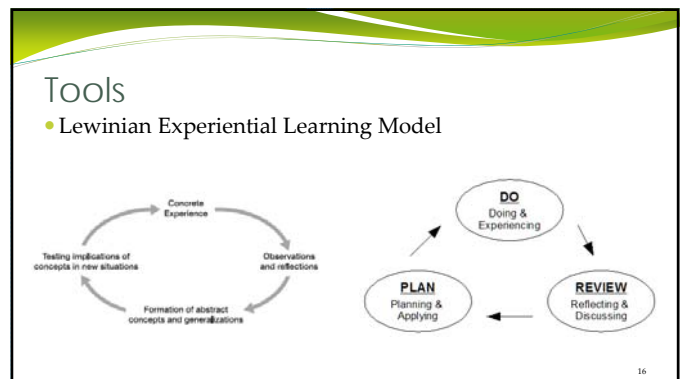
Adapted from: Brookfield, S.D. (1995). *Becoming a Critically Reflective Teacher*. San Francisco: Jossey Bass.

Tools

Brookfield's Critical Incident Questionnaire cont'd:

4. What action that anyone (teacher or student) took during any stage (or task) of the project did you find most confusing or questionable?
5. What about the stages (or tasks) of this project surprised you the most? (This could be something about our own reactions to what went on, or something that someone did, or anything else that occurs to you).
6. Was there any part or stage (task) of this project that you feel will prepare you for your future career in public health or food and nutrition?


Adapted from: Brookfield, S.D. (1995). *Becoming a Critically Reflective Teacher*. San Francisco: Jossey Bass.



Tools

Quantitative:
Interprofessional Collaborative Competencies Attainment Survey


Qualitative:
Brookfield's Critical Incident Questionnaire and Lewinian Experiential Learning Model



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College of Nursing & Health Professions

	NUTR 381 Quantity Food Production and Purchasing Students	PH 284 Public Health Students
Lab 1 Wednesday	4	10
Lab 2 Thursday	7	7
Lab 3 Tuesday	11	11




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Methods

Data analysis

Quantitative: SPSS Version 24 Descriptive Statistics of frequencies

- Cronbach's alpha reliability coefficient investigated internal consistency reliability
- Spearman's correlations coefficient of test-retest reliability
- Wilcoxon Signed Rank test was conducted to evaluate the impact of the interprofessional project on students' ICCAS responses measured on a seven point Likert type scale.



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Methods

Data analysis

Qualitative: Microsoft Word 2016

- Qualitative description by Qualitative Content Analysis
- Findings rendered in the form of categories, themes, or patterns that capture what the study participants said*
 - Original quote → Code
 - Several similar quotes → Code modification
 - Several similar codes → Category or Theme

*Sandelowski, M. (2000). Focus on research methods: Whatever happened to qualitative description? *Research in Nursing & Health*, 23, 224-240.
Brown, S.J. (2018). *Evidence-Based Nursing: The Research-Practice Connection*, 4th ed. (2018). Burlington, MA: Jones & Bartlett Learning, p. 45.



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Results / Quantitative

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Table 1 Participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Food and Nutrition	15	37.5	37.5	100.0
	Public Health	25	62.5	62.5	62.5
	Total	40	100.0	100.0	

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- Results / Quantitative
- UNIVERSITY OF SOUTHERN INDIANA
- Inferential statistical analysis assessed students on five (5) key constructs for the ICCAS tool:
 - Communication
 - Collaboration
 - Roles and Responsibilities
 - Conflict Resolution / Management
 - Team Functioning
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Results / Quantitative

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The ICCAS tool

- Internal reliability Cronbach's alpha for each sub-scale range: 0.834 – 0.972.
- The Spearman's correlation coefficient for inter-rater reliability range: 0.022 to 0.791 (p<0.05).

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Results / Quantitative

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The ICCAS tool

- Data suitable for ordinal level of measurement
- It could not be assumed that the paired differences between the before- and after- responses were normally distributed.
- Wilcoxon Signed Rank test was conducted to evaluate the impact of the interprofessional project on students' responses measured on a seven point Likert type scale.

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Results / Quantitative

The ICCAS tool

- A statistically significant increase ($p < 0.01$) was found in the ICCAS scores measured retrospectively, with the before-participation scores designated as Pre-test and after-participation scores designated as Post-test.
- Results indicated that there were significant differences in all constructs when evaluating scores between the pre-test and the post-test.

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Results

Table 2 Communication

Survey Item	Negative Ranks	N	p-value
1. Promote effective communication among members of an interprofessional (IP) team	Negative Ranks	1	
	Positive Ranks	22	
	Ties	17	
	Total	40	0.000
2. Actively listen to IP team members' ideas and concerns	Negative Ranks	0	
	Positive Ranks	20	
	Ties	20	
	Total	40	0.000
3. Express my ideas and concerns without being judgmental	Negative Ranks	3	
	Positive Ranks	17	
	Ties	20	
	Total	40	0.000
4. Provide constructive feedback to IP team members	Negative Ranks	1	
	Positive Ranks	19	
	Ties	20	
	Total	40	0.000
5. Express my ideas and concerns in a clear, concise manner	Negative Ranks	2	
	Positive Ranks	17	
	Ties	21	
	Total	40	0.000

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Results

Table 3 Collaboration

Survey Item	Negative Ranks	N	p-value
6. Seek out IP team members to address issues.	Negative Ranks	0	
	Positive Ranks	19	
	Ties	21	
	Total	40	0.000
7. Work effectively with IP team members to enhance care	Negative Ranks	2	
	Positive Ranks	20	
	Ties	18	
	Total	40	0.001
8. Learn with, from, and about IP team members to enhance care	Negative Ranks	0	
	Positive Ranks	22	
	Ties	18	
	Total	40	0.000

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Results

Table 4 Roles and Responsibilities

Survey Item	Negative Ranks	N	p-value
9. Identify and describe my abilities and contributions to the IP team	Negative Ranks	1	
	Positive Ranks	22	
	Ties	17	
	Total	40	0.000
10. Be accountable for my contributions to the IP team	Negative Ranks	1	
	Positive Ranks	22	
	Ties	17	
	Total	40	0.000
11. Understand the abilities and contributions of the IP team members.	Negative Ranks	2	
	Positive Ranks	19	
	Ties	19	
	Total	40	0.000
12. Recognize how others' skills and knowledge compliment and overlap with my own.	Negative Ranks	0	
	Positive Ranks	21	
	Ties	19	
	Total	40	0.000

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Results
Table 5
Conflict Management / Resolution

Survey Item		N	p-value
13. Actively listen to the perspectives of IP team members.	Negative Ranks	1	
	Positive Ranks	18	
	Ties	21	
	Total	40	0.001
14. Take into account the ideas of IP team members.	Negative Ranks	1	
	Positive Ranks	16	
	Ties	23	
	Total	40	0.001
15. Address team conflict in a respectful manner	Negative Ranks	2	
	Positive Ranks	16	
	Ties	22	
	Total	40	0.004

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Results
Table 6
Team Functioning

Survey Item		N	p-value
16. Develop an effective care plan with IP team members	Negative Ranks	0	
	Positive Ranks	20	
	Ties	20	
	Total	40	0.000
17. Negotiate responsibilities within overlapping scopes of practice	Negative Ranks	0	
	Positive Ranks	16	
	Ties	24	
	Total	40	0.000

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Results / Qualitative

- Critical Incident Questionnaire
- 6 Questions adapted from Brookfield's CIQ:
- Original 5 questions with #4 adapted from *most puzzling* or *confusing* to reflect conflict with *confusing and questionable*
- #6 added to reflect on future career application
- Qualitative Analysis: Original quote → Code
Several similar quotes → Code modification
Several similar codes → Category or theme


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Results / Qualitative

Question 1:
During which stage (or task) of this project did you feel most engaged?

- Meal prep
- Cooking
- Setting table
- Taking temperatures
- Observing
- Inspecting


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Results / Qualitative 

Question 2:
During which stage (or task) of this project did you feel most distanced from what was happening?

- Prepping
- Planning
- Doing dishes
- During silence
- Observing in beginning and end
- Clean up


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Results / Qualitative 

Question 3:
What action that anyone (teacher or student) took during any stage (or task) of the project was most affirming and helpful?

- Reaffirmation / assurance
- Chef assistance
- Following schedule
- Thermometer calibration
- Cooperation / observations allowed
- Hand washing procedure


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Results / Qualitative 

Question 4:
What action that anyone (teacher or student) took during any stage (or task) of the project did you find most confusing or questionable?

- Nothing
- Planning
- Documents (HACCP Plan)
- No glove use
- Unknown expectations
- Many assignments
- Resetting the table

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Results / Qualitative 

Question 5:
What about the stages (or tasks) of this project surprised you the most? (This could be something about our own reactions to what went on, or something that someone did, or anything else that occurs to you).

- All came together / time management
- Student leaders
- Awesome turn out
- Group work / focus / Q & A
- Observations
- Professionalism

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Results / Qualitative




Question 6:
Was there any part or stage (task) of this project that you feel will prepare you for your future career in public health or food and nutrition?

- Organizing
- ServSafe / HACCP
- Managing / communication
- Work with professionals
- Better food prep / contamination control
- Observation / interaction / checklist

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Conclusions



- Yes, Interprofessional Education (IPE) activity does enhance interdisciplinary student learning and collaboration.
- Yes, IPE does better prepare students for interprofessional careers.

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References



Brookfield, S. D. (2005). *The power of critical theory*. San Francisco: Jossey-Bass.

Brown, S.J. (2018). *Evidence-based nursing: The research-practice connection*, (4th ed.). Burlington, MA: Jones & Bartlett.

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